

Remarks

Reconsideration and allowance of this application are respectfully requested.

Claims 2-12 and 14-20 remain pending in the application. Claims 12 and 20 are independent. The sole rejection is respectfully submitted to be obviated in view of the remarks presented herein.

35 U.S.C. § 103(a) - Kelso

Claims 2-12 and 14-20 stand rejected under 35 U.S.C. U.S.C. § 103(a) as being unpatentable over GB 1 604 803 to Kelso, Jr. (hereinafter "Kelso"). The examiner states that with Kelso's process, "pressure is applied to a wood substrate and then impregnation liquid is applied" and that "[t]he disclosed process uses temperature and pressure to force water based wood treatment composition." The examiner asserts that "it would have been obvious to one of ordinary skill in the art to add a temperature element in the first step of the Kelso '803 method since such would improve impregnation process by removing water and other impurities contained in the wood" (Office Action page 2).

The rejection of claims 2-12 and 14-20 under § 103(a) based on Kelso is respectfully traversed. For at least the following reasons, the disclosure of Kelso would not have rendered obvious Applicants' claimed invention. First, the disclosure of Kelso does not teach each feature of Applicants' claimed invention.

Second, there is simply no teaching in Kelso that would have led one to modify the reference so as to arrive at Applicants' claimed invention.

By way of review, Applicants' invention is directed to a method of producing a fire-retardant flat structural member. The method is simple and economical, and provides a flat structural member with very good flame resistance properties. In addition, the invention is directed to a fire-retardant flat structural member produced according to the above-mentioned method.

Instant claim 12 defines a method that includes

heating a veneer sheet having pores so as to remove water from the pores thereof, the water that is removed being in a vapor phase; and
providing a resin within the pores, the resin that is provided being in a liquid phase,
the steps of heating and providing the resin being effected under an applied pressure such that the vapor phase water that is removed from the veneer sheet draws the liquid resin into the pores thereof.

According to the claimed method, the veneer sheet is heated under an applied pressure. Water that is within the pores of the veneer sheet is vaporized and removed therefrom. The water vapor that leaves the veneer sheet serves to draw the liquid resin into the vacated pores, thereby substituting the resin for the removed water vapor.

By substituting the resin for water in the pores, the negative properties of swelling and shrinking are reduced in the wood material, which has a positive effect on the dimensional

stability. In addition, of course, the fire resistance of the veneer sheet is considerably improved by the presence of the fire-resistant resin therein.

Kelso's process for "Wood Preservation" is different from Applicants' claimed invention. Kelso describes a method that includes "pressure impregnating wood with a *water-borne treatment material*, detaining the impregnated wood under pressure for a sufficient time for the water-borne treatment materials to precipitate on or otherwise react with the wood, and then reducing the pressure to at least, and preferably below, the pressure within the wood immediately prior to impregnation *so that a significant kickout can be obtained*" (Kelso page 2, line 65, through page 3, line 8) (emphasis added). In defining the word "kickout," Kelso explains that "[t]he *liquid* expelled from the wood by the difference between the internal and external pressures is referred to as 'kickout'" (page 2, lines 5-6). Kelso, therefore, discloses a "modified empty-cell process" (page 2, line 56) that combines features of a "full-cell" and an "empty-cell" process.

However, Kelso fails to teach removing water from the wood's pores before conducting the pressure impregnation. Even more specifically, Kelso fails to teach, *inter alia*, Applicants' claimed step of "heating a veneer sheet having pores so as to remove water from the pores thereof, the water that is removed being in a vapor phase." Applicants respectfully submit that there

is no disclosure whatsoever in Kelso of heating wood to remove water, let alone Applicants' specific claimed step of heating such that "the water that is removed [is] in a vapor phase." In fact, as indicated above, even when the pressure is reduced at the end of the process, Kelso simply teaches the expulsion of the liquid "kickout" from the wood. That is not Applicants' claimed invention.

Therefore, Kelso simply does not meet each feature of Applicants' claimed invention.

Nonetheless, as indicated above in the summary of the ground of rejection, the examiner asserts that "it would have been obvious to one of ordinary skill in the art to add a temperature element in the first step of the Kelso '803 method since such would improve impregnation process by removing water and other impurities contained in the wood."

However, Applicants respectfully submit that because of the above-described differences, there is simply no teaching in Kelso that would have led one to modify the reference in a way that would result in the embodiment of the invention defined by Applicants' claim 12.

As explained in Applicants' Amendment filed January 26, 2009, an important feature of Applicants' claimed method is the step of heating the veneer sheet so as to drive the water from the pores as the resin is added. That is, according to Applicants'

claimed method, *the water in the veneer is replaced with the resin by influence of the heating step.* Claim 12 specifically recites that "the steps of heating and providing the resin [are] effected under an applied pressure *such that the vapor phase water that is removed from the veneer sheet draws the liquid resin into the pores thereof.*" By supplying heat to the veneer, the water vapor escaping from the veneer draws the liquid resin into the pores of the veneer. By virtue of Applicants' claimed method, the amount of fire-retardant resin that can enter the pores of the wood is increased in a simple and economical manner. As a result, a wooden material with very good flame retarding properties is produced.

Kelso, however, discloses (page 3, lines 29-39) that the process of the invention comprises placing the wood in a pressure treatment vessel at an initial elevated pressure; introducing an aqueous treatment liquid into the vessel at the elevated pressure; increasing the pressure within the vessel to above the initial pressure to impregnate the wood with the treatment liquid; maintaining the pressure within the vessel sufficient to retain the treatment liquid in the wood *at a temperature of at least 65°C for a period of at least one hour after impregnation is complete until at least 90% of the treatment materials carried in the treatment liquid become affixed to or deposited within the wood*, reducing the pressure within the vessel to or below the initial pressure to permit the expulsion of spent treatment liquid from the wood; and collecting the spent treatment liquid. (Emphasis added)

That is, with regard to the use of heat, Kelso teaches the step of "maintaining the pressure within the vessel sufficient to retain the treatment liquid in the wood *at a temperature of at*

least 65°C for a period of at least one hour after impregnation is complete until at least 90% of the treatment materials carried in the treatment liquid become affixed to or deposited within the wood." In explaining the use of heat, Kelso states that "[t]he reaction between the treatment materials and the wood is greatly accelerated when the wood is heated during the time the impregnating solution is held within the wood" (page 3, lines 40-42) (emphasis added).

That is not Applicants' claimed invention. Applicants do not heat the wood to accelerate a reaction between the treatment materials and the wood. Applicants heat the veneer sheet so as to drive the water from the pores as the resin is added, i.e., *the water in the veneer is replaced with the resin by influence of the heating step.*

Furthermore, Kelso has no disclosure whatsoever that would support the examiner's assertion that "it would have been obvious to supplement water born[e] composition with liquid resin since such would improve efficiency of the impregnation and increased amount of resin in the wood" (Office Action page 2). Kelso's entire disclosure is in the context of using only "a water-borne treatment material." In fact, to improve impregnation, Kelso teaches a *reaction* between the treatment materials and the wood." Kelso teaches that "[t]his invention is based on the observation that the treatment materials can be reacted *in situ* during pressure

impregnation which makes it possible to protect wood, in the case of PCP, without the use of hydrocarbon solvents" (page 3, lines 15-17). Thus, contrary to the examiner's assertion, Applicants submit that a person having ordinary skill in the art would have no motivation to consider liquid resin as an impregnating material for the process described in Kelso.

Accordingly, the disclosure of Kelso would not have rendered obvious the invention defined by Applicants' claim 12. Claims 2-11 and 14-19 are allowable because they depend, either directly or indirectly, from claim 12, and for the subject matter recited therein. Product claim 20 is similarly allowable.

In view of the foregoing, this application is now in condition for allowance. If the examiner believes that an interview might expedite prosecution, the examiner is invited to contact the undersigned.

Respectfully submitted,

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